DEPARTMENT of ENVIRONMENTAL SERVICES Water Supply & Pollution Control Division — Biology Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake: PROFILE	E LAKE	Lake Area (ha):	5.99
Town:		Maximum depth (m):	4.9
County:		Mean depth (m):	2.4
River Basin:	Merrimack	Volume (m³):	144500
Latitude:	44°10' N	Relative depth:	1.8
Longitude:	71°41' W	Shore configuration:	1.27
Elevation (f	t): 1925	Areal water load (m/yr):	45.15
Share length	(m): 1100	Flushing rate (yr ⁻¹):	18.70
Watershed are	ea (ha): 304.4	P retention coeff.:	0.37
% watershed ;	ponded: 0.1	Lake type: natural	w/dam

BIOLOGICAL:	13 January 1987	9 July 1986
DOM. PHYTOPLANKTON (% TOTAL) #1	DINOBRYON 50%	PERIDINIUM 30%
#2	UROGLENOPSIS 35%	TINY PENNATE SPP. 25%
#3	ASTERIONELLA 14%	DINOBRYON 20%
PHYTOPLANKTON ABUNDANCE (cells/mL)		345.0
CHLOROPHYLL-A (µg/L)		1.47
DOM. ZOOPLANKTON (% TOTAL) #1	KERATELLA 65%	NAUPLIUS LARVAE 35%
#2	POLYARTHRA 16%	CALANOID COPEPODS 35%
#3	SYNCHAETA 14%	KELLICOTTIA 29%
ROTIFERS/LITER	529	9
MICROCRUSTACEA/LITER		22
ZOOPLANKTON ABUNDANCE (#/L)	529	31
VASCULAR PLANT ABUNDANCE		Sparse
SECCHI DISK TRANSPARENCY (m)		3.5
BOTTOM DISSOLVED OXYGEN (mg/L)	8.3	6.8
BACTERIA (fecal col., #/100 ml) #1		10
#2		< 10
#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 2.8 Hypolimnion volume (m³): 21000

CHEMICAL: Lake: PROFILE LAKE Town: FRANCONIA					
	13 January 1987		9 July 1986		
DEPTH (m)	1.0	3.0	2.0		4.0
pH (units)	6.3	6.4	6.9		6.8
A.N.C. (Alkalinity)	8.1	7.5	5.5		5.6
NITRATE & NITRITE NITROGEN	0.38	0.35	1.51		1.39
TOTAL KJELDAHL NITROGEN	0.28	0.30	0.35		0.33
TOTAL PHOSPHORUS	0.057	0.054	0.010		0.007
CONDUCTIVITY (pmhos/cm)	143.1	141.6	113.0		114.0
APPARENT COLOR (cpu)	11	11	20		10
MAGNESIUM			0.49		
CALCIUM			5.0		
SODIUM			13.6		
POTASSIUM			1.10		
CHLORIDE	30	30	24		24
SULFATE					
TN: TP	12	12	186		246
CALCITE SATURATION INDEX			3.0		

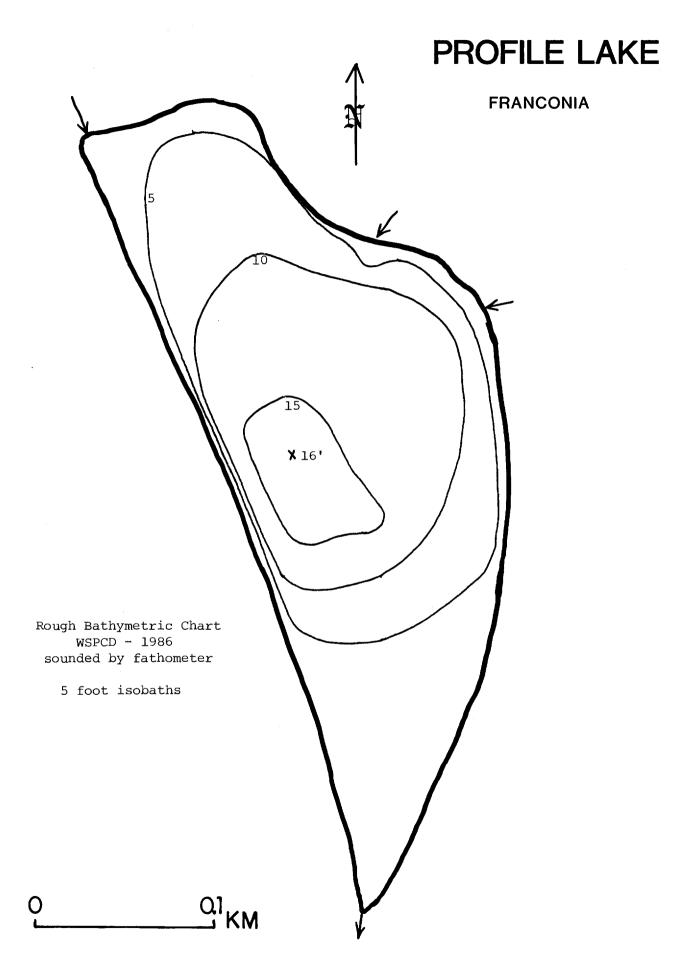
All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 1986

1	D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
	0	2	0	0	2	Oligo.

COMMENTS:

- 1. Previously called Ferrins Pond.
- 2. The whole-water phytoplankton was 50% greens and 40% golden algae. Tiny green flagellates (40%), <u>Dinobryon</u> (20%), and <u>Kephyrion</u> (20%) were the dominant genera.
- 3. Construction of I-93 through Franconia Notch occurred in 1985-1986. High lake turbidities were measured during that time (48 NTU on 11/7/85). Turbidity barriers (12) were placed in the inlet stream but were clearly ineffective during storm events. Erosion occurred into the pond, creating a sand delta at the inlet.
- 4. Lake turbidity was not high at the time of the above 1986 survey (1.7 NTU). The turbidity barriers were still present, but sediment was still entering the pond (inlet turbidity was 26 NTU).
- 5. See plant sheet for comment #5.



FIELD DATA SHEET

LAKE: PROFILE LAKE TOWN: FRANCONIA DATE: 07/09/86 WEATHER: PARTLY SUNNY, WINDY

DATE: 07709786	WEHIT	IER. PARILI SUNNI,	WIIADI
DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
0.1	19.0	9.1	98 %
1.0	19.0	9.1	98 %
2.0	19.0	9.2	99 %
2.5	19.0		
3.0	16.5	9.6	96 %
4.0	15.3	9.0	88 %
5.0	15.2	6.8	65 %

SECCHI DISK (m): 3.5

BOTTOM DEPTH (m): 5.0

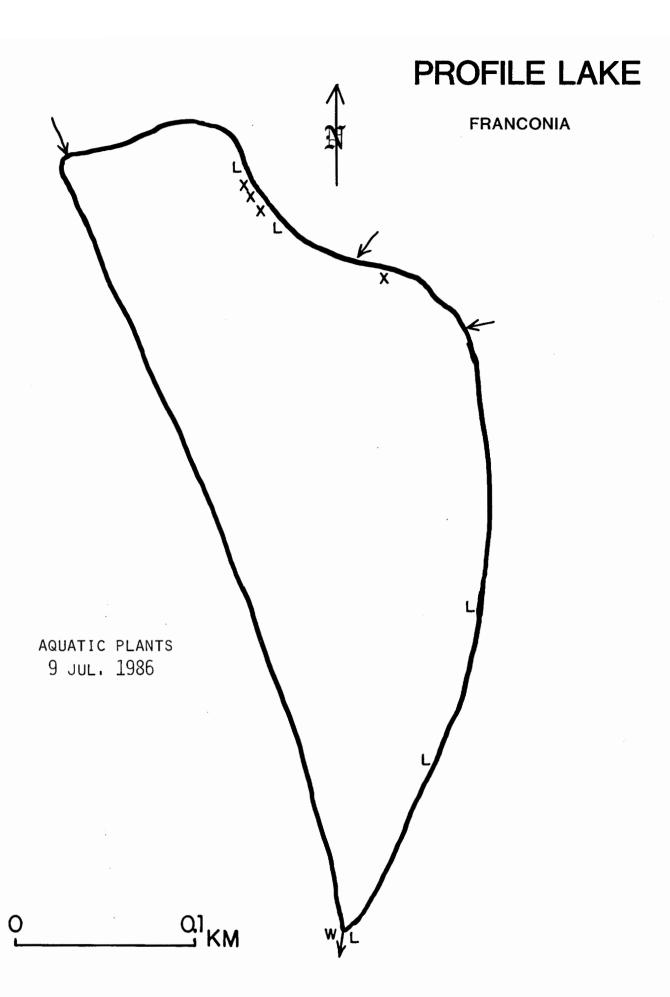
TIME: 1300

1. The pond had a turbid green tint, probably from silt from highway construction activities.

2. Although the change in temperature from top to bottom was only 3.8°C, a definite thermocline and hypolimnion was

present.

*Dissolved oxygen values are in mg/L



AQUATIC PLANT SURVEY						
LAK	E: PROFILE LAKE	TOWN: FRANCONIA DATE: 07/09/8				
	PLANT					
Key	GENERIC	COMMON	ABUNDANCE			
L	Lobelia dortmanna	Water lobelia	Sparse			
W	Potamogeton	Pondweed	Sparse			
S	Sparganium	Bur reed	Sparse			
×		Sterile thread-like leaf	Sparse			

			<u> </u>			
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GENERAL OBSERVATIONS:

- 1. Boat ramp was blocked as a result of highway construction.
- #5. The pond was previously surveyed in 1978. There was no change in trophic classification, but water clarity decreased from bottom visible at 4.2m in 1978 to 3.5m in 1986. Thermal stratification was present in 1986 but not in 1978, probably because of less sun penetration in 1986. Nitrates were much higher in 1986 (1.4 mg/L vs .2 mg/L) and conductivities were somewhat higher (114 vs 88 uS/cm).

OVERALL ABUNDANCE: Sparse